

January 30, 2015

Carlisle Zoning Board of Appeals
c/o Ms. Lisa Davis Lewis
Zoning Board of Appeals, Chair
66 Westford Street
Carlisle, MA 01741

Re: Response to Transportation Peer Review Comments
Proposed 40B Residential Development – The Birches
Long Ridge Road – Carlisle, Massachusetts

Dear Zoning Board of Appeals Members:

MDM Transportation Consultants, Inc. (MDM) has prepared the following response to transportation-related peer review comments for the above-referenced project, as issued in a letter by Nitsch Engineering dated November 3, 2014. To facilitate review, Nitsch Engineering comments may be paraphrased or truncated with corresponding MDM responses. For reference purposes, the entire Nitsch Engineering review letter and a copy of the revised Traffic Study are enclosed.

Response to November 3, 2014 Letter from Nitsch Engineering

Traffic Study

Comment 1: “Page 1 mentions the existence of a detached barn on the proposed site, and it is indicated in Figure 2 with a proposed residence in the location of the existing barn. The plan indicates the existing barn will be razed. We recommend the report also mention that the existing barn will be razed as part of the project.”

Response: The report has been updated to note that the existing barn will be razed.

Comment 2: “The descriptions of Long Ridge Road states, ‘Long Ridge Road is a dead-end road with a single travel lane in direction that connects Nowell Farme Road and Garnet Rock Lane’. This implies Long Ridge Road is one-way, however this is not the case and we recommend clarification.”

Response: The report has been updated to note that Long Ridge Road is a two-way roadway with one travel lane in each direction.

Comment 3: "The description of Bedford Street at River Road states that the location is a four-way un-signalized intersection with River Road under "STOP"-sign control. We presume that Bedford Road (Route 225) operates freely with no control, but we recommend stating the control type of the commercial driveways to 887 Bedford Road and 1 River Road, the former of which is included in the intersection and the latter is located in immediate proximity to the intersection."

Response: The report has been updated to note that Bedford Street operates freely and the commercial driveways, while no controls are posted, were observed to yield to Bedford Street traffic.

Comment 4: "River Road intersects Bedford Road an acute angle, we recommend this be noted in the description of the intersection and whether this affects the proposed project in any way."

Response: The report has been updated to note the skewed alignment of the River Street approach to Bedford Street. The intersection alignment is not expected to have any specific impact on the development of the Long Ridge Road site.

Comment 5: "We recommend noting the location of the proposed Skelton Road Subdivision (Elliot Farms) within Section 3.1.2 Background Development-Related Growth."

Response: The report has been updated to note the location of the proposed Skelton Road Subdivision (Elliot Farms).

Comment 6: "The intersection of Bedford Road (Route 225) at River Road is expected to experience level-of-service "F" during both the 2019 No-Build and 2019 Build Conditions, conveying that the project will have minimal impact on the operations at the intersection. River Road currently intersects Bedford Road (Route 225) at an acute angle, which is not a recommended condition. Though no safety issue was noted in the crash data, this geometry coupled with the future operations may pose a concern to the Town. Does the Applicant have any recommendations on what can be done to improve the condition?."

Response: With no specific safety issue to address, the Applicant cannot recommend any particular improvement to the Bedford Road (Route 225)/River Road intersection.

Waiver Requests

Comment 1: "The Applicant is seeking a waiver to allow for twenty (20) units on a Private Driveway as shown on the plan. Section 5.4.4 of the regulations allows for a maximum of six (6) "lots" to share a Private Driveway. Nitsch Engineering believes that in order for the waiver to be granted, the Applicant should provide secondary means of access to the Nowell Farm Road neighborhood for emergency vehicles, as recommended in Page 26 of the study and review the project with Police and Fire Departments for issues related to public safety."

Response: Based on our review of traffic operations, Norwell Farme Road currently serves the needs of the neighborhood with capacity to accommodate traffic generated by the proposed 20-unit residential development. MDM's statement in our November 2014 Traffic Impact Assessment (TIA), suggested that the Town, with input from emergency responders, consider formalizing a secondary means of access for emergency purposes based on our general observation of the existing neighborhood. We defer to the Carlisle Police and Fire Departments as to whether or not there is an actual need for such secondary access and subsequently, to the ZBA as to whether or not the Applicant should contribute to the installation of an emergency gate within the public right-of-way at the end of Nowell Farme Road.

Comment 2: "The Applicant is seeking a waiver that a subdivision containing more than 11 lots having legal frontage on a single dead-end street is required to have no less than two (2) noncontiguous accesses with existing Town Roads. Again, Nitsch Engineering concurs with the study that the Applicant should provide secondary means of access to the Nowell Farm Road neighborhood for emergency vehicles, as recommended in Page 26 of the study and review the project with Police and Fire Departments for issues related to public safety."

Response: This comment is virtually identical to Comment 1. See response to Comment 1 above.

Comment 3: "The Applicant is seeking a waiver that a subdivision roadway "shall be laid out such that the closure of any single road will deny access to no more than ten (10) building lots". If a secondary means of access to the Nowell Farm Road neighborhood is included, Nitsch Engineering recommends that the Applicant review the revised layout with the Fire and Police Department for potential life safety concerns."

Response: A secondary means of public access to the Nowell Farme Road neighborhood is not proposed as part of the site development.

Comment 4: "The Applicant is seeking a waiver from the minimum centerline offset requirement of 125 feet and is proposed at approximately 110 feet according to the plan and as addressed in the study. As the study states, the regulation is most likely in place to eliminate potential conflicts between back-to-back left-turning vehicles and that these may not frequently occur due to the quantity of traffic between the roadways. Nitsch Engineering recommends the Applicant explain to the Town why the offset cannot be achieved."

Response: The proposed access has been modified and will provide a 120-foot centerline offset from Garnet Rock Lane; a distance that meets residential street design guidelines.

Comment 5: "The Applicant is seeking a waiver from meeting the minimum centerline radius of 125 feet in favor of a radius of 80 feet. While the study includes a Fire Truck AutoTurn Analysis in the TAIS Appendix as Exhibit 1 and conveys that the truck can properly execute the necessary maneuvers, careful consideration must be given to roadway design speed, roadway superelevation and side friction factors with respect to establishing the desired radius. Furthermore, the proposed 80-foot radius curve is proposed from station 5+00 +/- to station 6+85 +/- . A crest vertical curve is proposed from station 4+75 to station 7+25 with a proposed exiting grade of -8%, which will increase the necessary braking distance along the curve. Nitsch Engineering recommends the Applicant should furnish all plans, calculations and assumptions to justify not achieving the minimum 125-foot radius and how the proposed -8% grade may affect vehicle operations."

Response: Based on the revised site plan, the maximum grade of the proposed internal roadway is 6% and the roadway width has been increased to 24-feet. An updated AutoTURN analysis has been provided in the revised report and illustrates that the internal roadway layout is accessible for the largest Carlisle fire apparatus.

Comment 6: "The Applicant is seeking a waiver from meeting maximum street grade of 6% when the centerline street radius is less than 200 feet. The proposed roadway grade is 8% and the street radius is well below the 200-foot requirement. Nitsch Engineering recommends the Applicant explain to the Town why the requirements cannot be met and propose ways to achieve the 6% street grade."

Response: Based on the revised site plan, the maximum grade of the proposed internal roadway is 6% which meets local design standards.

Comment 7: "The Applicant is seeking a waiver from the requirement that the Sag Vertical Curve "K" value (ratio of length of vertical curve to the algebraic difference between entering and exiting grades) of 24 be met. According to the plan, the "K" value of the Sag Vertical Curve from station 7+29.16 to station 8+70.84 is calculated at 20.1. Nitsch Engineering recommends the Applicant explain to the Town why the minimum K value cannot be met and propose ways to achieve a minimum K-value of 24 for this Sag Vertical Curve."

Response: Based on the revised site plan, the "K" value of the Sag Vertical Curve from Station 7+32.46 to Station 9+00.46 is calculated at 24 which appears to meet local design standards.

ZBA School Bus Stop Concern

Comment 1: It is our understanding that the ZBA is concerned with vehicles temporarily parking at The Birches entrance should a bus stop be designated on Long Ridge Road.

Response: As is common in many communities, including Carlisle, parents of elementary school children regularly drive to their child's school bus stop. If a bus stop at the Long Ridge Road/Site Roadway intersection is approved by the Carlisle Public Schools, we expect that several vehicles may be temporarily parked on the internal roadway as is common throughout the Town (see photo of Hanover Road, a 20-foot wide residential roadway).

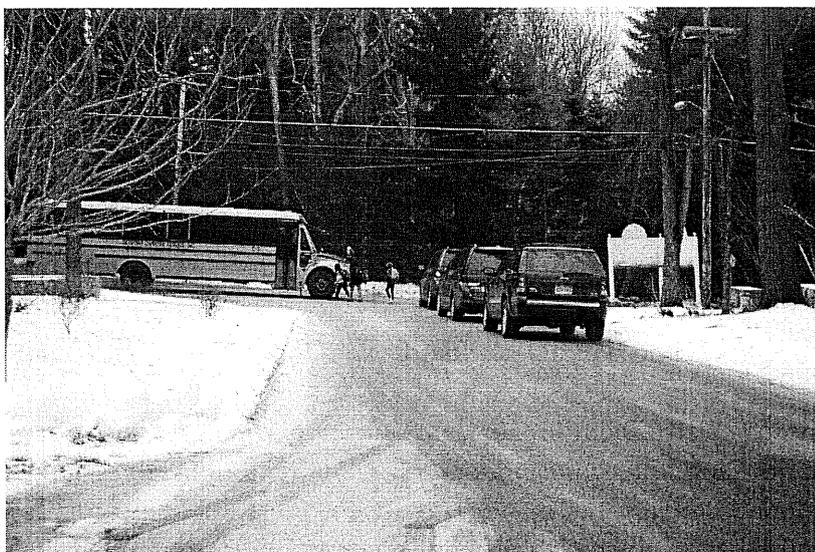


Photo 1: Hanover Road Bus Stop

While this practice could present a minor inconvenience to other residents of The Birches, this practice may actually increase the safety of the development as described below in an excerpt from *Residential Streets*¹ (underline is for emphasis):

“The traffic density and speed found on highways, arterial, and collector streets are absent from local streets, and driving attitudes and habits on local streets differ from driving behaviors on highways, arterials, and collector streets. Yielding momentarily to resolve minor traffic conflicts is practical at the speeds observed in residential areas. In residential areas, traffic yields to drivers backing from their driveways or drivers coming out of their driveways yield to oncoming traffic, and no one is unduly delayed. If parked vehicles impede residential traffic, approaching vehicles often yield and then proceed with caution. Street design that encourages this kind of cautious driver behavior can result in reduced speeds and more attentive drivers, and thus make streets safer.”

To our knowledge, the practice of parents parking at school bus stops on residential streets has not resulted in any specific accident trend in Carlisle or across Massachusetts. The low speed, low volume characteristics of the proposed site roadway and of Long Ridge Road, in conjunction with the 24-foot pavement width are typical environments for this type of activity and are not expected to generate any specific traffic safety issue. Furthermore, the addition of a bus stop on Long Ridge Road would create a looped bus route within the Nowell Farme Road neighborhood, thus eliminating the unfavorable practice of buses backing up near the end of Nowell Farme Road.

Summary

Nitsch Engineering generally agrees with the methodology included in the TIA and states that the study generally complies with transportation engineering industry standards. Specifically, on the issues of traffic volume data, trip generation estimates, intersection capacity analyses, crash analyses and sight distance evaluation, Nitsch Engineering has no comment.

MDM has prepared this letter and revised the TIA to reflect recent modifications to the site development plan and to address specific traffic review comments issued by Nitsch Engineering. We trust this information will be useful in the Board’s continued review of the project. Please feel free to contact me with any further comments.

¹ *Residential Streets, 3rd Edition*, Urban Land Institute, 2001.

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Sincerely,

MDM TRANSPORTATION CONSULTANTS, INC.

A handwritten signature in black ink that reads "Daniel J. Mills". The signature is written in a cursive, slightly slanted style.

Daniel J. Mills, P.E., PTOE
Principal

Enclosures (2)

cc: Jeffrey A. Brem, P.E. – Meisner Brem Corporation (via e-mail)
Douglas C. Deschenes, Esq - Deschenes & Farrell, P. C (via e-mail)